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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,883	07/28/2003	Hidenori Usuda	9319G-000536	3866
27572	7590	01/26/2005	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303			MOUTTET, BLAISE L	
			ART UNIT	PAPER NUMBER
			2853	

DATE MAILED: 01/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

HA

<b>Office Action Summary</b>	Application No. 10/628,883	Applicant(s) USUDA, HIDENORI	
	Examiner Blaise L Mouttet	Art Unit 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 June 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 June 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/30/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

2. The IDS filed April 30, 2004 has been considered.

### ***Drawings***

3. The replacement drawings were received on June 17, 2004.

The drawings are objected to because of the following informalities:

Figure 15 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

4. The replacement specification and abstract was received on June 17, 2004.

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The disclosure is objected to because of the following informalities:

On page 14, line 20 "FCC" should read --FFC-- as in the previous recitations.

Appropriate correction is required.

### ***Claim Objections***

5. Claims 1-8 are objected to because of the following informalities:

In claim 1, lines 1-2 "...a piezoelectric vibrator and discharges.." should read --...a piezoelectric vibrator which discharges.-- in accordance with proper syntax.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-3 and 9-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Hayami et al. US 4,072,958.

Hayami et al. discloses, regarding claims 1 and 9, a drive device and method of a liquid droplet discharge head comprising a piezoelectric vibrator (column 2, lines 40-45) which discharges liquid droplets from a discharge section by applying a predetermined drive waveform (abstract, figure 8e or 9e) to said piezoelectric vibrator to extend and retract the vibrator (column 2, lines 46-49); wherein, a drive control unit is provided

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(figure 4) that drives said piezoelectric vibrator according to said drive waveform composed of a curved shape (figure 8e or 9e).

Regarding claims 2 and 10, the waveform is a sinusoidal curve without sharp edges (figure 8e, 9e).

Regarding claim 3 and 11, the embodiment of figure 9 shows conversion to the curved sinusoidal waveform (figure 9e) from a rectangular square waveform (figure 9d) by the waveform conversion unit (figures 4 and 5).

7. Claims 1, 3, 4, 9, 11, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Murakami et al. US 4,563,689.

Murakami et al. discloses, regarding claims 1 and 9, a drive device and method of a liquid droplet discharge head comprising a piezoelectric vibrator (column 4, lines 59-61) which discharges liquid droplets from a discharge section by applying a predetermined drive waveform (figure 4b) to said piezoelectric vibrator to extend and retract the vibrator (column 5, lines 9-29); wherein, a drive control unit is provided (figure 5) that drives said piezoelectric vibrator according to said drive waveform composed of a curved shape (as shown and described the voltage pulse drive waveform of figure 4b has smoothly curved leading and trailing edges due to the charging and discharging rates of the piezoelectric vibrator's capacitance).

Regarding claim 3 and 11, conversion to the curved waveform (figure 4b) from a rectangular square waveform (figure 4a) occurs via a waveform conversion unit (the RC circuit formed by the resistor (6) and piezoelectric capacitance (7) in figure 5).

Regarding claims 4 and 12, the drive waveform contains a discharge waveform for discharging the liquid droplets (the large amplitude pulse of figure 4b) and a microvibration waveform that minutely vibrates said piezoelectric vibrator to a degree that does not discharge said liquid droplets (the small amplitude pulse of figure 4b) (column 5, lines 9-29).

8. Claim 17 is rejected under 35 U.S.C. 102(b) as being anticipated by Kashiwazaki et al. US 5,593,757.

It is initially noted that claim 17 falls under the category of a "product-by-process" claim (see MPEP 2113). Such claims are limited only to structure implied by recited process steps and not to the process steps themselves. In light of this, claim 15 only calls for electronic equipment provided with a device produced using a film that is capable of being formed by a drive device of a liquid droplet discharge head as claimed. Kashiwazaki et al. discloses televisions or computers (electronic equipment) provided with films (color filters) that are formed using a piezoelectric-type liquid drop ejecting head (column 1, lines 7-15, column 3, line 60 - column 4, line 4).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 5, 6, 13, 14, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami et al. US 4,563,689 in view of Kashiwazaki et al. US 5,593,757.

Initially it is noted, regarding claim 17, that dual 35 USC 102 and 35 USC 103 rejections are acceptable for product-by-process claims (see MPEP 2113).

Murakami et al. discloses the subject matter of claims 1 and 9 as explained in the 35 USC 102 rejection above.

Murakami et al. fails to disclose that the drive device for the ink jet head is part of a film manufacturing apparatus or production method that discharges a functional liquid from the liquid droplet discharge head onto a substrate to produce a color filter film or an electronic device that uses such a film.

Kashiwazaki et al. discloses a device and method for forming color filter membranes to be used in electronic devices wherein the filters are manufactured using piezoelectric type inkjet printers, such as shown by Murakami et al., that eject ink on substrates (figures 1-3, column 1, lines 7-15, column 3, line 60 - column 4, line 4).

It would have been obvious for a person of ordinary skill in the inkjet art at the time of the invention to employ the inkjet device and method of Murakami et al. in a device and method for forming a color filter for an electronic device as taught by Kashiwazaki et al.

The motivation for doing so would have been that using inkjet technology in color filter production results in a reduction in cost in manufacturing filters as suggested by column 2, lines 30-48 of Kashiwazaki et al.

10. Claims 5, 7, 13, 15, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami et al. US 4,563,689 in view of "A novel RGB multicolor light-emitting polymer display" by Kobayashi et al.

Initially it is noted, regarding claim 17, that dual 35 USC 102 and 35 USC 103 rejections are acceptable for product-by-process claims (see MPEP 2113).

Murakami et al. discloses the subject matter of claims 1 and 9 as explained in the 35 USC 102 rejection above.

Murakami et al. fails to disclose that the drive device for the ink jet head is part of a film manufacturing apparatus or production method that discharges a functional liquid from the liquid droplet discharge head onto a substrate to produce an organic electroluminescent element film or an electronic device that uses such a film.

Kobayashi et al. discloses that inkjet technology is advantageously employed to organic EL display manufacture since inkjet is a good delivery mechanism for the patterning of the polymer solutions.

It would have been obvious to a person of ordinary skill in the inkjet art at the time of the invention to employ the inkjet device and method of Murakami et al. in a device and method for forming an organic EL display for an electronic device as taught by Kobayashi et al.

The motivation for doing so would have been to produce an organic EL display efficiently as suggested by Kobayashi et al.



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11. Claims 5, 8, 13, 16, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami et al. US 4,563,689 in view of the abstract of JP 2002-134878.

Initially it is noted, regarding claim 17, that dual 35 USC 102 and 35 USC 103 rejections are acceptable for product-by-process claims (see MPEP 2113).

Murakami et al. discloses the subject matter of claims 1 and 9 as explained in the 35 USC 102 rejection above.

Murakami et al. fails to disclose that the drive device for the ink jet head is part of a film manufacturing apparatus or production method that discharges a functional liquid containing metallic fine particles from the liquid droplet discharge head onto a substrate to produce a metal wiring film or an electronic device that uses such a film.

The abstract of the '878 document discloses that inkjet technology that discharges functional liquid containing metallic fine particles is advantageously employed to form wiring pattern films for electronic devices to reduce equipment and production cost.

It would have been obvious to a person of ordinary skill in the inkjet art at the time of the invention to employ the inkjet device and method of Murakami et al. in a device and method for forming a wiring pattern film for an electronic device as taught by the '878 document.

The motivation for doing so would have been to produce a wiring pattern film with reduced cost as suggested by the abstract of the '878 document.

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***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Blaise Mouttet who may be reached at telephone number (571) 272-2150. The examiner can normally be reached on Monday-Friday from 8:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier, Art Unit 2853, can be reached at (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Blaise Mouttet January 21, 2005

*Blaise Mouttet 01/21/2005*